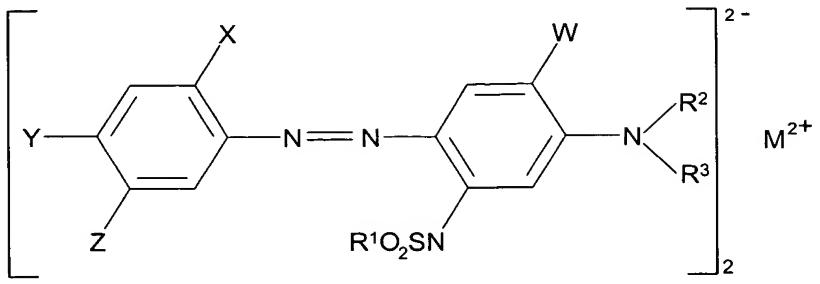
We claim:

1. Materials for high density optical recording media, represented by azo metal chelate compounds of formula (I):



(I)

in which

R^1 represents C_{1-6}alkyl、 phenyl or C_{1-6}alkyl-substituted phenyl;

R^2 and R^3, independently of each other, represent identical or different C_{1-6}alkyl, optionally substituted by C_{1-6}alkyl;

W represents hydrogen, C_{1-6}alkyl, C_{1-6}alkoxy or halogen;

X represents hydrogen, C_{1-6} alkyl, C_{1-6}alkoxy or halogen;

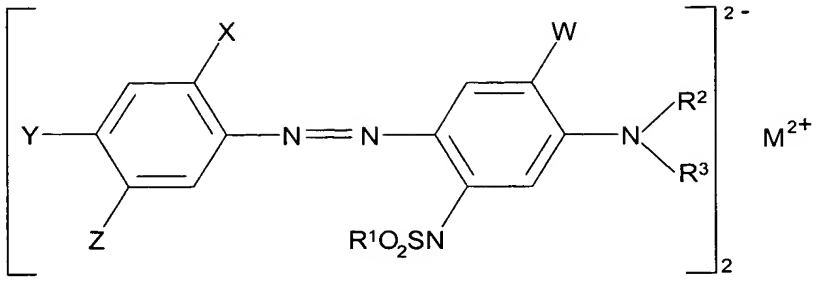
Y represents hydrogen or an amino derivative;

Z represents hydrogen, C_{1-6}alkyl, C_{1-6}alkoxy or halogen;

M represents a divalent metal selected from Group IB, IIB or VIIIB in Periodic Table.

2. Materials according to claim 1, wherein R^1 is selected from methyl, phenyl or methylphenyl; R^2 and R^3, independently of each other, represent identical or different methyl or ethyl.
3. Materials according to claim 1, wherein W represents hydrogen, methyl, methoxy or chloro; X represents hydrogen, methyl or methoxy; Y represents hydrogen or benzamido (NBz); Z represents hydrogen, methyl or methoxy.
4. Materials according to claim 1, wherein the divalent metal M represents Ni, Cu or Zn.
5. High density recordable optical recording media, comprising a recording layer and a reflective layer formed on a substrate in order, characterized

in that the recording layer is coated with an azo metal chelate compound of formula (I):



(I)

in which

R^1 represents C_{1-6}alkyl、 phenyl or C_{1-6}alkyl-substituted phenyl;

R^2 and R^3, independently of each other, represent the same or different C_{1-6}alkyl, optionally substituted by C_{1-6}alkyl;

W represents hydrogen, C_{1-6}alkyl, C_{1-6}alkoxy or halogen;

X represents hydrogen, C_{1-6} alkyl, C_{1-6}alkoxy or halogen;

Y represents hydrogen or an amino derivative;

Z represents hydrogen, C_{1-6}alkyl, C_{1-6}alkoxy or halogen;

M represents a divalent metal selected from Group IB, IIB or VIIIB in Periodic Table.

6. High density optical recording media according to claim 5, wherein R^1 is selected from the group consisting of methyl, phenyl or methylphenyl; R^2 and R^3, independently of each other, represent identical or different methyl or ethyl.
7. High density optical recording media according to claim 5, wherein W represents hydrogen, methyl, methoxy or chloro; X represents hydrogen, methyl or methoxy; Y represents hydrogen or benzamido (NBz); Z represents hydrogen, methyl or methoxy.
8. High density optical recording media according to claim 5, wherein the divalent metal M represents Ni, Cu or Zn.
9. A process for the preparation of high density optical recording media according to claim 5, comprising the steps of:

1) preparing a round polymer substrate having an outer diameter of 120 mm, an inner diameter of 15 mm, a thickness of 0.6 mm by an infection molding machine and forming continuous spiral grooves having a depth of 150 to 180 nm, a half-height width of 340 to 380 nm, a bottom width of 260 to 280 nm thereon by printing with a stamper,
2) dissolving the materials according to any one of claims 1 to 4 in solvents to form a 1.5 % solution of azo metal chelate compounds, followed by spin coating the substrate with the dye solution,
3) obtaining an absorption at the maximal absorption wavelength in a range of 0.7 to 0.8 after coating the recording layer with the dye solution, determined by UV-Visible Spectroscopy,
4) baking the coating at a temperature of 60 to 80℃ for 10 to 20 minutes to evaporate off solvents,
5) forming an about 120 nm gold film as a reflective layer on the recording layer containing a dye by a sputtering machine, then spin coating said substrate with a lacquer and curing it to form a protective layer, and
6) coating the protective layer with a layer of adhesive by screen printing or spin coating, on which a transparent polymer substrate having a thickness of 0.6 mm and an outer diameter of 120 mm is attached, to obtain a recordable optical recording medium with a thickness of 1.2 to 1.25 mm and an outer diameter of 120 mm.

10. A process for the preparation of high density optical recording media according to claim 6, comprising the steps of:

1) preparing a round polymer substrate having an outer diameter of 120 mm, an inner diameter of 15 mm, a thickness of 0.6 mm by an infection molding machine and forming continuous spiral grooves having a depth of 150 to 180 nm, a half-height width of 340 to 380 nm, a bottom width of 260 to 280 nm thereon by printing with a stamper,
2) dissolving the materials according to any one of claims 1 to 4 in solvents to form a 1.5 % solution of azo metal chelate compounds, followed by spin coating the substrate with the dye solution,
3) obtaining an absorption at the maximal absorption wavelength in a range of 0.7 to 0.8 after coating the recording layer with the dye solution, determined by UV-Visible Spectroscopy,
4) baking the coating at a temperature of 60 to 80℃ for 10 to 20 minutes to evaporate off solvents,
5) forming an about 120 nm gold film as a reflective layer on the recording

layer containing a dye by a sputtering machine, then spin coating said substrate with a lacquer and curing it to form a protective layer, and

6) coating the protective layer with a layer of adhesive by screen printing or spin coating, on which a transparent polymer substrate having a thickness of 0.6 mm and an outer diameter of 120 mm is attached, to obtain a recordable optical recording medium with a thickness of 1.2 to 1.25 mm and an outer diameter of 120 mm.

11. A process for the preparation of high density optical recording media according to claim 7, comprising the steps of:

1) preparing a round polymer substrate having an outer diameter of 120 mm, an inner diameter of 15 mm, a thickness of 0.6 mm by an infection molding machine and forming continuous spiral grooves having a depth of 150 to 180 nm, a half-height width of 340 to 380 nm, a bottom width of 260 to 280 nm thereon by printing with a stamper,
2) dissolving the materials according to any one of claims 1 to 4 in solvents to form a 1.5 % solution of azo metal chelate compounds, followed by spin coating the substrate with the dye solution,
3) obtaining an absorption at the maximal absorption wavelength in a range of 0.7 to 0.8 after coating the recording layer with the dye solution, determined by UV-Visible Spectroscopy,
4) baking the coating at a temperature of 60 to 80℃ for 10 to 20 minutes to evaporate off solvents,
5) forming an about 120 nm gold film as a reflective layer on the recording layer containing a dye by a sputtering machine, then spin coating said substrate with a lacquer and curing it to form a protective layer, and
6) coating the protective layer with a layer of adhesive by screen printing or spin coating, on which a transparent polymer substrate having a thickness of 0.6 mm and an outer diameter of 120 mm is attached, to obtain a recordable optical recording medium with a thickness of 1.2 to 1.25 mm and an outer diameter of 120 mm.

12. A process for the preparation of high density optical recording media according to claim 8, comprising the steps of:

1) preparing a round polymer substrate having an outer diameter of 120 mm, an inner diameter of 15 mm, a thickness of 0.6 mm by an infection molding machine and forming continuous spiral grooves having a depth of 150 to 180

nm, a half-height width of 340 to 380 nm, a bottom width of 260 to 280 nm thereon by printing with a stamper,

2) dissolving the materials according to any one of claims 1 to 4 in solvents to form a 1.5 % solution of azo metal chelate compounds, followed by spin coating the substrate with the dye solution,
3) obtaining an absorption at the maximal absorption wavelength in a range of 0.7 to 0.8 after coating the recording layer with the dye solution, determined by UV-Visible Spectroscopy,
4) baking the coating at a temperature of 60 to 80℃ for 10 to 20 minutes to evaporate off solvents,
5) forming an about 120 nm gold film as a reflective layer on the recording layer containing a dye by a sputtering machine, then spin coating said substrate with a lacquer and curing it to form a protective layer, and
6) coating the protective layer with a layer of adhesive by screen printing or spin coating, on which a transparent polymer substrate having a thickness of 0.6 mm and an outer diameter of 120 mm is attached, to obtain a recordable optical recording medium with a thickness of 1.2 to 1.25 mm and an outer diameter of 120 mm.

13. The process according to claim 9, wherein the substrate is polycarbonate.
14. The process according to claim 10, wherein the substrate is polycarbonate.
15. The process according to claim 11, wherein the substrate is polycarbonate.
16. The process according to claim 12, wherein the substrate is polycarbonate.